A PSYCHOSOCIAL APPROACH TO IMPROVING GROWTH IN GIFTED STUDENTS' ACADEMIC WRITING

A Record of Study

by

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ABSTRACT

Underachievement for all student populations remains a pressing concern for educational systems, and gifted student populations are no exception. However, many aim for academic-focused interventions while leaving out the social-emotional driving factors in underachievement. Researchers have found connections between social-emotional interventions and academic success, but there have been fewer studies targeting the impact of a domain-specific, social-emotional intervention embedded into the academic course as a possible ameliorating factor for underachievement with gifted students. The purpose of this study was to analyze the impact that a growth-mindset intervention has on gifted students' growth and achievement in language arts when embedded into the classroom curriculum for the first semester. In this quasi-experimental, quantitative study, survey data and achievement data were collected and analyzed. I found that the intervention could not be said to have significantly impacted students' growth in language arts or mindset towards academic writing. However, the intervention did result in significantly positive growth in general growth mindsets towards intelligence. The results indicate that while psychosocial interventions can impact a students' mindset, more time or more targeted intervention may be necessary to see the impact of that growth on secondary measures such as achievement. On this basis, it is recommended that further research and studies may need to be conducted in domain-specific interventions and longitudinal data may also be necessary to further understanding of how to address the full scope of driving factors behind gifted students' underachievement in a specific domain, such as academic writing.

DEDICATION

I have benefited my entire life from a support system that has always given me the courage to try new things, the faith that I can prevail through the hardest of challenges, and the perspective that the most important things in life cannot be measured by external standards.

Thank you to my parents for always wanting more for me and clearing a path for me to chase my dreams.

Thank you to my husband for taking that foundation and adding another level of love and faith in me that still takes my breath away.

Thank you to my son for being a daily example of working through struggle with humor, determination, and courage. I started this journey to be your role model, but you have set the standard for me in so many ways.

In honor of Dr. Susan Simpson-Hull whose legacy will inspire generations of educators to positively impact public school education for all students.

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All work for the record of study was completed by the student, under the advisement of Professor James Laub [chair], Professor Patrick Slattery [co-chair] and Professor Joyce Juntune of the Department of Education Psychology and Professor Larry Kelly of the Department of Teaching Learning and Culture.

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NOMENCLATURE

STAAR	State of Texas Assessment of Academic Readiness
EOC	State of Texas End of Course Exam to meet graduation requirements
NAGC	National Association for Gifted Children
MCBP	Maladaptive Competence Belief Pathway
SEL	Social-emotional Learning
DVBP	Declining Value Beliefs Pathway
NWEA	Northwest Evaluation Association
MAP	Measures of Academic Progress

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CHAPTER I

INTRODUCTION:

CONTEXT AND PURPOSE OF THE ACTION

National and State Context

In the broadest sense, underachievement might be considered the single most pervasive educational issue tackled in a school system. Student achievement remains one of the primary vision or goal statements of any public educational institution. However, exactly how does an educational system meet the needs of all of its varied constituents in such a manner that each individual meets his or her highest potential? In the world of gifted education, this issue is even more nuanced when considering the discrepancy between the potential performance, as measured by cognitive and aptitude tests, and the actual academic performance of a student, as measured by state examinations and achievements tests. With the advent of the most recent accountability system in Texas measured through the State of Texas Assessments of Academic Readiness (STAAR) and state required end of course (EOC) exams, achievement of student groups, post-secondary readiness, individual growth, and advanced levels of performance are all analyzed when assigning ratings for a school and district. This system shines a light on the need for many districts to refocus their efforts on not only those who are underachieving below a minimum cut score, but also to consider more closely the highest-achieving groups of their student populations that are underachieving by scoring below their potential ability, such as below advanced or proficient performance levels. The National Association for Gifted Children (NAGC) refers to this phenomenon as the excellence gap and calls for equity for all students when considering academic achievement levels. The historic focus on minimum standards both at the national and

state level have contributed to an increasing gap between the number of students capable of performing at the highest level and those actually performing at those levels. This gap in academic excellence is all but ignored in educational literature and rarely discussed at the local level (National Association for Gifted Children, 2015).

In addition to achievement and excellence gaps, the national conversation in the educational arena regarding social-emotional learning in schools has been gaining momentum recently. In a systematic review of social emotional learning (SEL) and different states' standards for SEL curriculum, Eklund, Kilpatrick, Kilgus, and Haider (2018) reported a growing body of research indicating SEL programs have the "capacity to positively impact social, emotional, and behavioral functioning, as well as student academic achievement" (p. 317). Research specific to gifted students echo the need for SEL curriculum promoted for general education. Gifted students are not more likely than students not identified as gifted to need social emotional support in school, but the sensitivities and intensities associated with gifted students can add complexity to the students' needs. Unfortunately, it is rare for a gifted program to address students' psychosocial needs in addition to talent development and academic rigor. The National Association for Gifted Children (2018) called for more action and research in providing appropriate social emotional support for gifted students because "serving the whole gifted child requires more than intensive and challenging academic or talent development experiences" (p. 6). Although the need for closing the excellence gap and promoting strong psychosocial development is widely recognized, less work in gifted education has been done to examine the relationship between the two areas.

Situational Context

I work in a large, diverse urban/suburban district in the state of Texas that serves approximately 30,000 students with 7% of the students identified as gifted and talented. The district supplies a gifted and talented specialist for each elementary and middle school. In the elementary schools, the specialist directly provides services to gifted students four days a week for an hour per grade level. At the middle school level, specialists provide program support only, and the gifted services include advanced courses with sections for gifted students along with course acceleration options. These sections are taught by teachers with local certification in gifted studies. At the high school level, services are provided primarily through advanced courses and instructors of those courses have local gifted and talented certification and College Board training and preparation as well. SEL and counseling services are provided to all students without any specific guidance for gifted students. However, school counselors at each level in the district are required to have six local hours of credit in the nature and needs of gifted students.

In addition to these district-wide services, students who qualify through additional specialized testing are offered the opportunity to attend the district's magnet school for highly gifted students. Services provided at the magnet school include accelerated academic plans for each student, integrated social-emotional learning targeted for gifted populations, and enriching extracurricular opportunities. The magnet school also employs a school counselor who provides additional targeted-small group lessons in addition to the district's social-emotional learning program. Each teacher in the magnet school also gives weekly social-emotional lessons to their students to further their social-emotional development.

While the excellence gap at the magnet school is less marked than in the district's larger gifted population, there still remains a sizable gap in the area of academic writing as evidenced through both the school's mastery levels on the state examination and the school's performance on a nationally standardized achievement test in language arts.

Statement of the Problem

Although research points to multiple pathways that can lead to an excellence gap for gifted students, in this study I focus on the "big fish, little pond effect," otherwise known as the maladaptive competence belief pathway (Snyder & Linnenbrink-Garcia, 2013). Through the lens of this theory, it follows that students who are identified as gifted, are praised for that ability by both parents and teachers, and hold high expectations for all academic output often end up with a fixed, perfectionist mindset. As a result, students may have unrealistic academic expectations and view editing, revising, and academic perseverance as weakness or an attack on their self-worth. This lack of academic grit could lead to task avoidance, disrupted literacy development, and, ultimately, underachievement in writing.

Ideally, a gifted student would be placed in a high-challenge environment early in the student's academic career and receive recognition and reinforcement for high levels of work ethic, perseverance, and processing. This combination of appropriate challenge and growth-mindset would result in gifted students developing academic grit and valuing the iterative nature of writing. As a result, the English language arts achievement scores of gifted students would better correlate with the students' verbal, cognitive scores resulting in writing achievement exceeding the state average accordingly.

By embedding a psychosocial intervention with best practices in literacy instruction, gifted students will be able to build more positive adaptive strategies such as developing a growth mindset and academic grit, resulting in increases in gifted students' writing achievement. Only through an integrated effort to address psychosocial and discipline-specific needs will gifted students be able to close the gap between their potential and their performance.

Research Questions

In order to evaluate the effectiveness of a psychosocial intervention on gifted students' mindsets towards writing and growth in writing achievement, in this study I answered the following research questions:

(1) Is there a difference in the amount of growth in academic writing achievement between a group of gifted, fourth-grade students exposed to an embedded growth mindset intervention and a group that did not experience academic writing lessons with embedded growth mindset components?

(2a) Is there a significant difference between students' mindset regarding their ability to change their general intelligence before and after a growth-mindset curricular intervention?

(2b) Is there a significant difference between students' mindset regarding their ability to change their writing ability before and after a growth-mindset curricular intervention?

(3a) Is there a correlation between movement on a growth mindset survey about general intelligence and growth in academic writing achievement for gifted fourth graders?

(3b) Is there a correlation between movement on a growth mindset survey about writing ability and growth in academic writing achievement for gifted fourth graders?

Personal Context

I believe that all students deserve to grow each year in school regardless of their learning ability, background, or special circumstance. While educational reforms tend to focus on those students who are achieving below grade-level standard, I believe one of the most at-risk groups for not learning anything new in a school year are those exceptional students who enter above

grade level. Due to accountability and high-stakes testing, teachers rarely have the time, energy, or impetus to appropriately challenge gifted learners with any above grade-level content, or even enrichment of on-level material. This practice places gifted learners at risk for not growing and progressing while simultaneously cementing a perfectionist mindset in these students due to an early lack of challenge.

I started my educational career as a fifth-grade elementary teacher and faced this very same challenge as a new teacher. Within my classroom, I had students who ranged in reading levels from first grade up to a ninth-grade level. The disparity between levels persisted across all other subject matter as well. One of the most pressing needs early in my career was how to effectively challenge all students in my classroom. I tried to put together projects that the gifted students could work on independently and cooperatively, but those projects did little to teach students that which they did not already know. I went to professional development classes for gifted and talented learners and differentiation, but in practice, I still knew and despaired that my highest students received much less of my time and energy than the other students in my classroom.

A move to a new district was also a move to a new grade level for me, fourth grade, which has a deep focus on writing instruction due to state-wide testing. Teaching writing presented all new challenges as it is a subject that not only requires academic skills, but also requires soft skills such as grit, resilience, persistence, and the ability to see room for improvement. I realized that the students who struggled the most with the soft skills were my students identified as gifted and talented. I made a special effort to model my own writing process and show students that all writers reflect and improve upon their work.

During my time as a fourth-grade writing teacher, I saw how writing ability can grow in students and facilitate a level of confidence that other subjects did not seem to instill. Writing gave students a voice; they were the creators of content and not just consumers of lessons. During this time, I pursued and obtained my master's degree in curriculum and instruction, and my thesis focused on how writing to the instructor through dialogue journals could impact students' scientific processing skills and science achievement.

Ultimately, my love of curriculum and instruction led me to the opportunity to open a new school in my district targeting instruction for gifted and talented students with achievement and cognitive levels so far above grade level that traditional instructional practices could not meet these students' needs. As this group of students had always been a priority for me as a teacher, I eagerly accepted the opportunity to lead a school where the unique needs of the highly gifted could best be met. The magnet school has now been open for five years and has expanded into middle school. Our school priorities are to individualize instruction for each student, teach students how to accurately and effectively self-evaluate their own work, and to develop deep relationships with students in order to meet their academic and social-emotional needs most effectively.

As I reflect upon my school's areas for improvement, it came as no surprise to me that even the most gifted verbal students in my school still struggled with academic writing. Once again, I could see how students' willingness to learn, revise, and make mistakes correlated with the students' success in writing and passion for writing. As a messy, iterative process, writing did not appeal to my students who were perfectionist, approval-seeking, and competitive. It

became a goal of mine to help students develop growth mindsets in all areas of their life and not establish a mindset that their worth lies in their ability to be the best or perfect without effort.

During my time as the school's headmaster, I started my journey towards a doctoral degree in curriculum instruction. I have focused my studies on the gifted population and writing whenever applicable and have been intrigued by the psychosocial elements I see in theory and practice within my school. My record of study pulls in two of my greatest passions—growing gifted students and growing gifted writers. Specifically, in my record of study, I explore how embedding psychosocial lesson elements on mindsets, grit, and perseverance can help gifted students reframe their relationship with writing and improve their writing achievement as a result.

Terminology

For the purposes in this study, the following definitions are used:

- *Gifted* individuals have high levels of performance or talent that need specialized services to meet their needs; areas of giftedness include, but are not limited to, academic areas, creativity, artistic ability, and leadership.
- *Underachievement* is a disparity between expected achievement and actual achievement; this term is frequently used when students who are cognitively gifted in a specific academic area fail to achieve in the same academic subject area in school.
- *Perfectionism* is an unfounded belief that all efforts should immediately result in perfection without failure or iterative growth; perfectionism is a common trait in gifted students.
- A *mindset* is a frame of reference, set of attitudes, or mental disposition through which a person perceives tasks and life in general.
- A *growth mindset* is a mindset, or frame of mind, that values growth, improvement, effort, and hard work and works toward continuous improvement.
- A *fixed mindset* is a mindset, or frame of mind, that values results and believes that talent is natural and does not require growth or effort to achieve at high levels.
- *Achievement motivation* is a term that describes the underlying reasons for working towards the accomplishment of a particular goal.
- *Goal valuation* is a term that describes a students' belief in the intrinsic worth of a particular goal or achievement.

- A *psychosocial intervention* is an intervention that focuses on SEL rather than content area learning.

Conclusions for Chapter I

I have observed that gifted students can be their own worst enemy. A need to please coupled with a fierce desire to excel above others often weighs down a student's natural ability in writing. The resulting anxiety can stunt an otherwise gifted student's academic writing progress. When faced with a student showing a lack of academic progress, schools and teachers have a tendency to immediately jump to curriculum-focused interventions. However, if students have not established social-emotional safety within the discipline, then learning may not occur regardless of the quality of the curriculum. There is a need to explore the possible connections and impacts between students' mindset towards learning generally, and academic writing specifically.

CHAPTER II

REVIEW OF SUPPORTING SCHOLARSHIP

Review of the Literature

Empirical studies or research articles specifically tackling the issue of underachievement in writing for gifted students are not readily available; although, achievement data, anecdotal evidence, and practitioners' collective wisdom point to the problem. As such, this review begins with a discussion of the literature specific to writing and gifted students followed by a presentation of a more well-developed field of research in gifted education—underachievement and achievement motivation regardless of content area. A closer analysis of gifted students' underachievement and achievement motivation led to a study of the following topics: perfectionism, mindsets, and interventions. The current literature supports the exploration of the idea that the disconnect between gifted children and writing may be a natural extension of some of the population's tendency toward overexcitabilities and social-emotional sensitivities. These psychological factors lead to fixed mindsets, perfectionism, and maladaptive responses to failure. As such, a psychosocial intervention for gifted students' writing underachievement could prove to be an effective approach leading to improved academic writing achievement in gifted populations.

Methods

Database searches through Texas A&M library resources, including Educational Resources Information Center (ERIC) and the American Psychological Association database (PsycInfo), were conducted using the descriptors *gifted, talented, high ability, writing, literacy, achievement, underachievement, achievement motivation, perfectionism, mindsets, and*

interventions. For the purpose of this review, most sources included were published from 2000–2019, and dissertations were not included. Additionally, a manual review for the years 2014, 2015, 2016, 2017, and 2018 was conducted of the major journals in gifted education—*Gifted Child Quarterly*, *Journal for the Education of the Gifted*, and *Roeper Review*.

Gifted Children and Academic Writing

Although a shortage of research deals specifically with the unique struggles of a gifted student and writing, the gifted field has worked in the areas of graphical output, relationships with writing, and achievement goals specific to writing with the gifted population. Baum, Cooper, and Neu (2001) discussed struggles twice-exceptional students may have in writing along with other curricular areas. Twice-exceptional students are those who are identified both as gifted and learning disabled. The authors note handwriting can be a factor in limiting the success of a gifted writer as the student may develop asynchronously or have a deficit in written expression as a result of a learning disability. A young student with verbal capabilities well above grade level may struggle simply with the physical task of formation of letters in a legible format leaving them in a "quandary when needing to express their thoughts and create original products" (Baum et al., 2001, p. 483). The types of remediation often used to rectify poor graphical output skills involving rote practice drills can frustrate a gifted learner and take up time "in which gifted learning-disabled students could be otherwise engaged in stimulating, higher order thinking" (Baum, et al., 2001, p. 483). Fletcher and Sampson (2012) recommended an approach that situates the practice of handwriting and expression of ideas in a meaningful, authentic literary context that will engage the gifted learner. Additionally, the authors discussed guidelines for supporting gifted learners, including considering both motor and cognitive efforts

with writing. Recently, Roessingh and Bence (2017) conducted an action research study of writing development for second grade students in a school for gifted learners. The researchers noted similar concerns in the lack of research focusing directly on gifted learners and writing and also noted a meaningful disconnect between the number of students reaching the highest levels of reading achievement compared to the number reaching a similar achievement level in writing. Roessingh and Bence (2017) linked this excellence gap partly to emotional overexcitabilities (OE):

> Emotional OE is most evident among young gifted learners when their academic work is not consistent with their potential, thus undermining their confidence and fueling an intense sense of failure in an inescapable cycle that can lead to reluctant writer symptoms (Rinard, 2004). Silverman (1999) noted that the perfectionist nature of many of these youngsters combined with their perception of needing to perform, but the inability to do so, often leads to outbursts of tears of frustration and reluctance to persist at the task. (p.172)

Gifted children with tendencies towards maladaptive perfectionism may exhibit similar patterns of behavior and growth in academic writing as their gifted peers with twice exceptionalities.

Since not all gifted students have writing difficulties, a closer look at those who are successful in the task can shine light on common weaknesses in gifted students. One complication with the development of writers, both gifted and non-gifted alike, lies in the tendency of the school system to prioritize reading over writing in the school setting (Olthouse, 2014). Successful writers often share the following characteristics: intrinsically motivated to write, prolific readers, and capable of using high-level skills such as humor, imagery, and appropriate diction. It would follow that students who are not strong writers may lack one or more of these necessary conditions. In the case of students identified as gifted through quantitative cognitive scores, the students may not be proficient, avid readers. Additionally,

those students who find positive identity in being a strong student may adhere too rigidly to the teacher's model of appropriate writing restricting their natural talents (Olthouse, 2014). Contrasting successful gifted writers with those who struggle reveals an intriguing overlap in terms of intrinsic motivation—those who are internally motivated to write tend to produce more writing and grow more as a result. In contrast, those students who avoid the writing task in order to avoid feelings of frustration and failure will enter a cycle of self-fulfilling prophecy that may be difficult to interrupt.

Achievement Motivation Across all Content Areas

Although empirical research is relatively thin when looking at gifted children specifically and their relationship with writing, there is no lack of research when looking at achievement and underachievement with gifted students. Dai, Swanson, and Cheng (2011) conducted a survey of 1,234 empirical research projects involving gifted education and found that underachievement was one of the four primary, target areas for researchers over a period of 12 years, 1998–2010. Seventy-three studies dealing with domain-specific or subject-matter categories were identified, but none of those studies deal with writing as a distinct discipline; although, 23 were identified in the area of literacy or language arts. However, a search through the literature reconfirmed the tendency of both the education system and the research to privilege reading over writing (Dai et al., 2011).

While underachievement in gifted populations is a topic of nearly a quarter of research studies conducted in the field, the definition of underachievement is still debated. Reis and McCoach (2000) explored various definitions of underachievement in the literature and concluded with a useful definition of underachievement as a discrepancy between expected

achievement and measured achievement. Ziegler and Stoeger (2012) challenged this traditional definition and proposed an alternative based not on IQ constructs but rather on past performance. Regardless of the approach used to define underachievement, the research supports the phenomena of gifted learners performing below potential; according to Ziegler et al. (2012), such research includes studies by Berkowitz and Cicchelli (2004), Chukwu-etu (2009); Delisle and Berger (1990); Fletcher (2005); Hoover-Schultz (2005); Khan (2005); Kim (2008); Montgomery (2009); Reis and McCoach (2000); Rimm (2008); and Smith (2005). Underachievement models will likely continue to be an area of interest in the field of gifted education, but for the practitioner, it is equally important that both the causes of underachievement as well as ways to ameliorate the underachievement be fully explored.

After establishing gifted underachievement as a recognized singularity, an exploration of the underlying causes of such underachievement follows as a natural progression. Snyder and Linnenbrink-Garcia (2013) offered a promising framework for two primary pathways to gifted underachievement. The framework goes beyond a discussion of motivation as present or deficient and presents a more integrated, complex viewpoint of either a maladaptive competence belief pathway (MCBP) or a declining value beliefs pathway (DVBP; Snyder & Linnenbrink-Garcia, 2013). The MCBP described underachievement as a way of protecting the student's identity of self with a gifted label. The authors described this pathway as follows:

> In the Maladaptive Competence Beliefs Pathway, several factors (early insufficient academic challenge, parent and teacher practices, and certain gifted labels) are proposed to give rise to maladaptive motivational beliefs . . . . These beliefs include entity beliefs, normative conceptions of ability, self-worth contingent upon giftedness and academic success, and high attainment value for academics . . . . When the curriculum shifts to become more challenging . . . these students are confronted with a threat to self-worth, particularly due to contingency of self-worth on academics and entity beliefs. (Snyder & Linnenbrink-Garcia, 2013, p. 221)

Students in this pathway would avoid growth and challenge because academic struggle would threaten their identity as a capable student who tackles problems effortlessly. As a result, many students impacted by an MCBP would engage in behaviors that would help them avoid situations with challenges but will also erode the student's self-esteem and ultimately lead to academic underachievement (Snyder & Linnenbrink-Garcia, 2013).

Alternatively, a DVBP presents a scenario in which gifted students are presented with insufficient academic challenges without entity beliefs regarding intelligence as a result of not being identified as gifted or simply assuming that gifted is not who they are but is rather what they do. This combination may result in students' devaluing academic challenges and efforts and disengaging from tasks deemed meaningless or boring. When students meet challenges later in their career as higher rigor or higher quantity of work, they lack the intrinsic motivation to do well in academics and as the cost of doing well increases, students disengage further, and underachievement is the result.

A major distinguishing factor between the two pathways lies in a change of context for the students coupled with the type of challenge students face in their academic career. In the DVBP, students receive increase in rigor and quantity, but peer groups do not change, and academic coursework is either low-challenging and high volume or solely increasing academic challenge. In the MCBP framework, students value doing well as a result of being identified as gifted and high adult expectations. These students also receive a change in context through a form of ability grouping and the increased challenge threatens their entity belief and maladaptive coping mechanisms begin to form. Snyder and Linnenbrink-Garcia (2013) point to the two pathways being primarily mutually exclusive due to early beliefs and a differing change in

context. For students selected for a highly selective program, such as a magnet school for highly gifted students, the MCBP framework becomes the most applicable as the contextual factors are all present.

Although the framework has yet to be thoroughly empirically validated, it extends motivational theory and presents a "more nuanced, person-centered approach to understanding the multiple pathways to achievement" (Snyder & Linnenbrink, 2013, p. 224) and can be a practical guide for practitioners and researchers alike when searching for methods to "understand how to support gifted student growth across a wide variety of contexts, ensuring that all gifted students fulfill their greatest potential" (Snyder & Linnenbrink, 2013, p. 224). While the MCBP does not specifically include perfectionism and mindsets, the underlying descriptions are evident in the model and warrants an additional exploration of the literature surrounding the nature of perfectionism and the impact of mindsets on student achievement.

Perfectionism

Perfectionism, a belief that actual performance must meet a much higher state of desired performance, has long been studied in gifted-education research. Initial researchers sought to discover a link between gifted students and a tendency towards perfection before pivoting towards a better understanding of the nuances of perfectionism as a paradigm. Most recently, researchers have embedded perfectionism into broader overall frameworks, such as MCBP, and began to construct studies in order to obtain needed empirical validation.

Early research efforts to determine if gifted students had a higher tendency towards perfectionism than general populations were not successful, and the current consensus is that gifted students are no more likely than their non-gifted peers to experience perfectionism;

although, a link between perfectionism and gifted children can be confirmed (Neumeister, 2016). For example, even in early stages of research on perfectionism and gifted students, Frost and Marten (1990) reported that perfectionism played a more negative role with gifted students specifically when involving an evaluation component as opposed to general populations. However, limiting factors in the research base in gifted education included a tendency for researchers to use targeted populations that may not have applicability across a broader range of gifted students such as high-achieving secondary students, undergraduates in honors programs, and gifted Chinese students (Neumeister, 2016). Since current empirical evidence has not confirmed perfectionism as a trait that is more prevalent in gifted students than other populations according to various researchers (for a review, see Fletcher & Neumeister, 2012), research in gifted education moved towards models to further define varying types of perfectionism and how these specifically correlated to gifted students.

While early examiners of perfectionism had a tendency to view it as unidimensional and solely negative in nature, research in both the fields of psychology and gifted education has extended this thinking by leading to many different proposed subcategories of perfectionism. While the terminology is varied, most of these categories can be classified as either productive or maladaptive (Neumeister, 2016). Mofield and Peters (2018b) described the two categories as follows:

> Positive perfectionism (sometimes known as positive striving, healthy, adaptive, or normal perfectionism) is a healthy striving toward a high standard and can be a driving force toward excellence, but maladaptive perfectionism (i.e., excessive concerns, unhealthy, maladaptive, or neurotic perfectionism) breeds dissatisfaction and anxiety. (p. 177)

After reviewing the research on perfectionism in general populations, Fletcher and Neumeister (2012) summarized the current understanding of perfectionism as a multidimensional construct typified generally as either adaptive and/or self-oriented or maladaptive and/or socially prescribed and found that research in gifted populations mirrored this typology.

In addition to studying perfectionism in gifted and non-gifted students, Fletcher and Neumeister (2012) also explored the relationship of perfectionism and achievement motivation, drawing parallels from broader research with general populations in order to better understand achievement motivation in the smaller subgroup of gifted individuals. When exploring the connection between perfectionism and achievement motivation, the authors posited that "self-oriented perfectionism was related to the adoption of mastery approach goals, performance approach goals, and performance avoidance goals, and socially prescribed perfectionism was related to the adoption of performance approach and performance avoidance goals" (Fletcher & Neumeister, 2012, p. 674). So while both types of perfectionists held performance approach and avoidance goals (meaning they were extrinsically motivated by a desire to be seen as competent in comparison to others and, inversely, by a fear to avoid as being seen incompetent in comparison to others), only the self-oriented perfectionists were balanced by a more intrinsically-motivated mastery approach goals. Connecting with the work involving achievement motivation, Linnenbrink-Garcia et al. (2018) examined integrative motivational profiles to further understanding of patterns of motivation linked to the greatest levels of engagement and achievement. The researchers found that in both elementary-aged children and college undergraduates, "profiles with the greatest engagement and achievement were characterized by highly levels of mastery goals, task value, and perceived competence" (p.

1041). Mastery approach goals were associated with more intrinsically motivated statements such as valuing learning for its own importance, mastering new skills, and having a thorough understanding of the content. Considering the previous findings of Fletcher and Neumeister (2012), it follows that socially prescribed, maladaptive perfectionists would not align with a motivational profile that is connected with positive engagement and achievement, as maladaptive perfectionists were not found to endorse mastery approach goals.

While acknowledging that gifted individuals may not experience higher rates of perfectionism, regardless of the typology, than the general population, Neumeister espoused the need for continued and further research into "the question of whether gifted students' experiences of perfectionism are different from those of typical students" (Henshon, 2017, p. 224) in terms of intensity in reaction to failures, duration of time needed to move on from mistakes, and the impact of perfectionism on academic decisions. In line with this thinking, Mofield and Peters (2015) explored relationships between gifted adolescent students' perfectionism and overexcitabilities (OEs) as a possible way that gifted individuals may experience perfectionism more intensely. They found that significant relationships exist between OEs and perfectionism, and that OEs can be predictors for both healthy and unhealthy perfectionism. The results of the study "help explain the unique manifestation of perfectionism in gifted students because their intense emotional awareness of their own personal expectations can translate into perfectionism" (Mofield & Peters, 2015, p.420). Perrone-McGovern, Simon-Dack, Beduna, Williams, and Esche (2015) conducted a similar study with adults and investigated the "interrelationships among emotional overexcitability, perfectionism, emotion regulation, and subjective well-being" (p. 343). The researchers found support for a link

between adults with higher emotional overexcitability also had lower emotional regulation, but interestingly they did not find a link between maladaptive perfectionism and lower emotional regulation or subjective well-being. However, they did note that "one defining trait of maladaptive perfectionism is the inability to appropriately judge their abilities against their goals [and] . . . perhaps maladaptive perfectionists are misjudging their abilities to emotionally regulate" (Perrone-McGovern et al., 2015, p. 352). Overall, current research indicates that individuals with OEs, often identified as gifted, may experience perfectionism differently and perhaps more intensely, but extended research into this question is needed to fully understand the complexities of the connection.

Current understanding of maladaptive perfectionism is evident in the MCBP model created by Snyder and Linnenbrink-Garcia in several areas. First, the student holds early beliefs of high self-worth and high expectancies and is praised by outside influences. These beliefs coupled with later increases in challenge can produce the effect of students feeling an intense threat of failure, and a comparison group of higher-ability peers can also be threatening to students with performance approach and performance avoidance goals (Snyder & Linnenbrink-Garcia, 2013). Maladaptive perfectionism, or socially prescribed perfectionism, demands that students perform on par or above peers and sees failure as a threat to identity. As a coping mechanism, perfectionists may self-handicap, disengage, and potentially experience lower self-concept as a result. Since gifted students with maladaptive perfectionism gain a positive sense of self through a comparison with peers as lesser, once they reach a point where they are no longer in the top percentile, such as in a college setting, they may remove themselves from challenge (Fletcher & Neumeister, 2012). Maladaptive perfectionism wreaks havoc not only in gifted

individuals' ability to achieve in academic settings, but also can lead to physical health issues such as added stress and cardiovascular disease that would impact every area of life (Corson, Loveless, Mochrie, & Whited, 2018). In conclusion, maladaptive perfectionism then can be particularly harmful as it can result in life-long consequences as the gifted individual no longer seeks improvement, but rather finds comfort in convenience and ease.

Mindsets

Perfectionism and mindsets research dovetails well as perfectionism and fixed mindsets are often found in the same individuals and some use the terminology interchangeably. Yeager and Dweck (2012) actually characterized maladaptive perfectionism as a fixed mindset when they explored the connection between mindsets and underachievement. A fixed mindset is a way of thinking that presupposes that intellect and abilities are inborn and immutable; a growth mindset, in contrast, operates under the belief that intellect and abilities are just a starting off point and that, with enough effort and practice, ability can grow (Dweck, 2006). Specifically, Yeager and Dweck (2012) looked at the interaction between the belief system that effort and challenge built success and increased the intellectual ability of the person. Likewise, students with the opposite belief system, that challenges make a person feel inadequate or stupid and must be avoided, had a lack of resilience and task commitment. Major findings supporting Dweck's original research include propensity for students with fixed mindsets to engage in behaviors that protect self-identity, such as procrastination, poor work ethic, and challenge avoidance. Gifted underachievers have also been shown to have behaviors typically shown to be associated with fixed mindsets, or entity beliefs about intelligence, while highly-intelligent high achievers espouse beliefs that typify growth mindsets, or incremental beliefs about intelligence (Siegle &

Langley, 2016). Mofield and Peters (2018b) emphasized the importance of the connection between perfectionism and mindsets because "educators know that mindsets are malleable; fixed mindsets can be cultivated into growth mindsets, which in turn might influence more positive approaches to attaining high standards" (p. 177–178). While a link between the belief systems of perfectionism and fixed mindsets have been widely established, the natural progression is to explore how mindsets may impact achievement and success in academic domains.

Subsequently, researchers have attempted to describe the relationship between mindsets and achievement. Aronson, Fried, and Good; Blackwell, Trzesniewski, and Dweck; and Good, Aronson, and Inzlicht (as cited by Yeager & Dweck, 2012) all found statistically significant increases in GPA in studies where students were taught that intelligence can be grown through effort. Although Yeager and Dweck (2012) did not include research specific to the gifted population, they did reference that promoting resilience and a growth mindset can benefit all types of students, even the high-achieving students. Subotnik, Olszewski-Kubilius, and Worrell (2011) presented a connection between mindset research in general populations and research with psychosocial variables in gifted education and noted that "the research knowledge base indicates that psychosocial variables are determining influences in the successful development of talent" (p. 3). However, the authors also noted that more work was to be done in this field and called for additional research identifying which psychosocial variables have the greatest impact on talent development with gifted individuals. As an answer to this call to action, Dixson, Worrell, Olszewski-Kubilius, and Subotnik (2016) conducted a study examining the following psychosocial variables: grit, hope, and academic self-efficacy. The authors described academic self-efficacy as "one's perceived ability to do academic tasks, whereas hope consists of one's

perceived capacity to accomplish one's goal (a self-efficacy component) as well as one's ability to envision a path to accomplish those goals" (p. 69) and grit as a variable more related to perseverance and passionate task commitment. The authors found that the variables do impact academic achievement in varying levels of significance. Self-efficacy had the most impact followed by hope and then grit (Dixson et al., 2016). This study is significant as it lends credibility to the claim that mindset interventions could have a powerful impact on gifted students' academic achievement as all three variables can be seen as integral pieces of the growth mindset model. With a growth mindset, students must believe that they have, or will have, the ability to both commit and achieve growth resulting in an optimistic frame of mind that will give the students an outlook characterized by hope.

Mofield and Peters (2018a) explored the relationship between mindsets, perfectionism, and attitudes of achievement in gifted students and compared them to typical and high-achieving students who were not identified as gifted. The authors noted the link between perfectionism and mindsets in the following way:

> For students who endorse entity beliefs, challenges threaten one's belief that he or she is competent, so challenges are avoided. Given that these factors can potentially inhibit achievement, it is important to study entity beliefs, avoidance orientations, and maladaptive perfectionism as they relate to giftedness....Accordingly, gifted students classified as unhealthy perfectionists scored highest on the measure of fixed mindset. (Mofield & Peters, 2018a, p. 330)

Similar to previous research in gifted education regarding perfectionism, the authors were unable to find any differences between gifted, advanced, and typical students and greater numbers of fixed or growth mindsets. However, they did reveal a tendency for students with a growth mindset to have higher ratings for positive perfectionism. In contrast, students with fixed mindsets were more likely to exhibit characteristics of maladaptive perfectionism. While there is

an association between maladaptive perfectionism and fixed mindsets, Mofield and Peters (2018a) suggested that "gifted students are not more vulnerable to develop fixed mindsets" (p.327). However, the authors did affirm that gifted students who are placed in a context without appropriate challenge early in their educational career were at risk to develop a fixed mindset and associated maladaptive perfectionism. They also asserted that individuals can hold a mixture of fixed and growth mindsets, particularly towards specific academic and nonacademic domains, and called for additional research to be done that is domain-specific (Mofield & Peters, 2018a).

As a field, cognitive neuroscience has also explored the connection between beliefs about intelligence and the impact those beliefs may have on various neural tests. In adult studies, links have been established between individuals with growth mindsets and an increase in attention allocation to mistakes and higher levels of post-error performance. In other words, individuals with growth mindsets pay more attention to their errors, react positively to them, and have higher scores with reduced mistakes upon retesting when compared to adults with a more a more fixed, entity belief system about intelligence. Schroder et al. (2017) extended this body of research by conducting the neural tests with school-aged children. The researchers found similar results with young children stating that the study demonstrated "a greater tendency of growth-minded children, compared to fixed-minded children, to direct attention toward their mistakes in order to improve their subsequent performance" (Schroeder et al., 2017, p. 47). Studies in neuroscience help to explain the relationship found in educational psychology research between incremental belief systems and academic achievement by further explaining the impact a growth mindset has on the brain's response to mistakes and errors during performance tasks.

Interventions and Intervention Information

Having established a connection between psychosocial variables such as mindsets and perfectionism on students' academic achievement, researchers have also sought to go beyond identification to amelioration through interventions. Social-emotional difficulties and underachievement are inextricably interwoven. The two topics are even described by some researchers as having a reciprocal relationship (Blaas, 2014). Furthermore, the literature points toward specific characteristics of gifted underachievers and pathways to underachievement that can be improved through both strategy-based and curricular-based interventions. While addressing perfectionism, mindsets, and goal valuation in general may lead to improved outcomes (Morisano & Shore, 2010), tying these interventions to a discipline-based context could create the largest gains (Albertson & Billingsley, 2001; Schunk & Swartz, 1993).

Subotnik et al. (2011) examined a wide range of issues in gifted education including a discussion of the definition of giftedness, public policy related to gifted education, psychological science, talent development models, and research agendas for the field. The authors concluded their detailed monograph by extolling the importance of psychosocial variables at every stage of development for improving performance of gifted learners at all stages of development stating, "psychosocial awareness and skills should be taught in all domains by parents, teachers, coaches and mentors explicitly and deliberately, not left to chance" (Subotnik et al., 2011, p. 40). This supports previous interventions such as two studies conducted by Blackwell, Trzesniewski, and Dweck (2007), who found that students who held incremental beliefs about intelligence and growth mindsets also "endorse stronger learning goals, hold more positive beliefs about effort, and make fewer ability-based, 'helpless' attributions," (p. 258) and the students who were

exposed to growth-mindset interventions, compared to a control group, were able to reverse a declining trend in achievement. Vekas and Wade (2017) also found support in controlled clinical trials for psychosocial interventions, specifically targeting perfectionism in children. They found that even brief periods of intervention can reduce maladaptive perfectionism and increase overall well-being. Olszewski-Kubilius, Subotnik, and Worrell (2017) followed up on previous work and presented research supporting their call for talent development to be less generalized and more domain-specific and listed inputs at each stage of talent development along with corresponding psychosocial skills responses "such as motivation and persistence, resiliency, and grit [that] are the critical levers that enable individuals to successfully transition to a higher stage of talent development" (p. 65). Throughout their discussion of inputs and psychosocial skills responses, the authors referenced and reinforced growth mindsets as critical stages of personal development (Olszewski-Kubilius et al., 2017).

Spitzer and Aronson (2015) reviewed a variety of social psychological interventions, including studies involving mindsets, and concluded that the literature indicates, "brief psychological interventions can narrow what many see as intractable gaps in academic achievement" (p. 1) and the authors encouraged schools to consider their specific population's context in choosing the intervention that will produce positive results. Recently Yeager et al. (2016) expanded efforts on mindset interventions by using design thinking to scale up interventions to be used with larger audiences and measured the effectiveness of the new intervention. Not only did the authors successfully create a model that can be used for improving and scaling future interventions, they also found small but significant effect sizes

from the scaled-up interventions. More tests of these interventions are necessary, but the initial results from research are promising.

Researchers are calling for both educators and education policy makers alike to place more focused and sustained energy into developing growth mindsets alongside the core curriculum as an intervention that could improve educational achievement. Rattan, Savani, Chugh, and Dweck (2015) recommended that schools "integrate validated academic mindset programs and practices into school programming [and] teach growth and belonging academic mindsets to students during the course of other school programming" (p. 723).

However, along with calls for education to prioritize interventions that focus on social-emotional learning and psychosocial variables, there are also gaps in the research towards effective interventions that should be addressed. Siegle and Langley (2016) pointed out a current dearth of longitudinal studies that would help to verify that the positive results seen from short-term studies are sustainable and lasting. Additionally, the researchers also advocated for studies that focus on mindsets and goal orientations.

Martin (2015) addressed both of those questions by investigating the "relationships between implicit theories about intelligence (incremental and entity theories) and growth (personal best, PB) goals—with particular interest in the ordering of factors across time" (p. 207). Findings showed that a tendency to use growth goals in Time 1 positively predicted a growth-oriented mindset in Time 2 and negatively predicted a more fixed-oriented mindset in Time 2. Secondly, the studies showed that the beliefs of intelligence were sustained and deepened between Time 1 and Time 2. Finally, Martin found evidence to support that beliefs of intelligence in Time 1 did not predict a tendency to use growth goals in Time 2. Taken in

conjunction, these three findings indicate that “individuals can develop specific cognitions (and behaviour and affect) that can impact (or counter) deeper schema and orientations held by an individual” (Martin, 2015, p. 217). The idea that growth goals may dominate and perhaps even transform a person’s belief about the nature of intelligence has implications for future academic interventions and may indicate that efforts should move past espousing and encouraging a change in mindsets but rather focus on effective and meaningful growth-oriented goal-setting with students in order to impact both achievement and mindsets.

Alignment with Action Research Traditions

Anderson, Herr, and Nihlen (2007) discussed various action research traditions and although this study does not fit perfectly within those traditional categories, several heavily influence the approach taken to examine relationships between mindsets and writing underachievement in highly gifted students. The action research definition as a "spiral in which each cycle increases the researcher’s knowledge of the original question, puzzle, or problem and leads to its solution" (p. 20) has definite applicability to this study as I focused on one cycle of learning, but, ultimately, my research did not end with that single cycle but required many more iterations of study to truly untangle the impacts of psychosocial variables on achievement within the context of a gifted school. Regardless of the study’s findings, the results will lead to ever-widening cycles of inquiry, self-reflection, and continual improvement. Collaborative and participatory approaches to action research also influenced this study’s design. However, the record of study would best be described as collaborative and not participatory, as defined by Anderson et al. (2007), because the students themselves were not participating partners in the research process. The tradition of action science plays a role in this record of study in the sense

that the study was intended to "tap into the complex theories of action that underlie and maintain the status quo" (Anderson et al., 2007, p. 27) and built upon the theories behind perfectionism, mindsets, and underachievement in gifted populations to examine possible social-emotional variables that go beyond simple skill-related academic weaknesses in the area of writing.

Conceptual Framework

Although there are multiple pathways that lead to underachievement in gifted students, the conceptual framework for this study focuses on the "big fish, little pond effect," otherwise known as the maladaptive competence belief pathway (Snyder & Linnenbrink-Garcia, 2013). In this framework, students who are identified as gifted, praised for that ability by both parents and teachers, and hold high expectations for all academic output often end up with a fixed, perfectionist mindset. As a result of that mindset, students hold unrealistic expectations and view editing, revising, and academic perseverance as weakness or an attack on their self-worth. This lack of academic grit leads to task avoidance, disrupted literacy development, and, ultimately, underachievement in writing.

Calkins and Ehrenworth (2016) emphasized three elements that are necessary for successful writing instruction: time to write, choice in topic and strategies, and response in the form of feedback. Maladaptive perfectionism and fixed mindsets can erode all three of these necessary elements. Students who avoid writing tasks due to fear of failure will not have the necessary quantity of writing practice necessary for growth and achievement. Likewise, students' strategic choices will impact their ability to write as two of the most impactful strategies for successful self-regulation in writing include goal-setting and self-assessment, and these behaviors are most likely to occur in a positive manner by individuals with an incremental

belief of intelligence. Finally, in order for feedback to the learner to be impactful, it must be received and attended to as meaningful, and both psychological and neuroscience studies have found that individuals with fixed beliefs are less likely to learn from their mistakes (Schroder et al., 2017). By embedding a psychosocial intervention with best practices in literacy instruction, gifted students will be able to build more positive adaptive strategies, such as developing a growth mindset and academic grit, which result in increases in gifted students' writing achievement and growth. Figure 1 depicts the conceptual framework used in this study.

Conclusions for Chapter II

Academic underachievement, including the writing domain, remains a major problem plaguing gifted education. Research and theoretical frameworks help describe gifted students' underachievement and include elements of perfectionism, achievement motivation, and academic mindsets. Research in general populations and gifted populations point towards formative writing feedback as an extremely effective strategy for remediating gaps in writing achievement (Calkins & Ehrenworth, 2016). Unfortunately, gifted students within a maladaptive competence belief pathway view constructive feedback on areas needing improvement as a threat to their self-worth and identity as being gifted and they may reject the very intervention that shows the most promise with other learners. Recent research in psychological science supports the efficacy of interventions that address psychosocial components of underachievement, with promising studies showing moderate to more significant gains (Yeager et al., 2016). Subsequently, an intervention that intertwines the best practice of formative feedback in writing with an effective mindset intervention may successfully improve gifted students' underachievement in the writing domain.

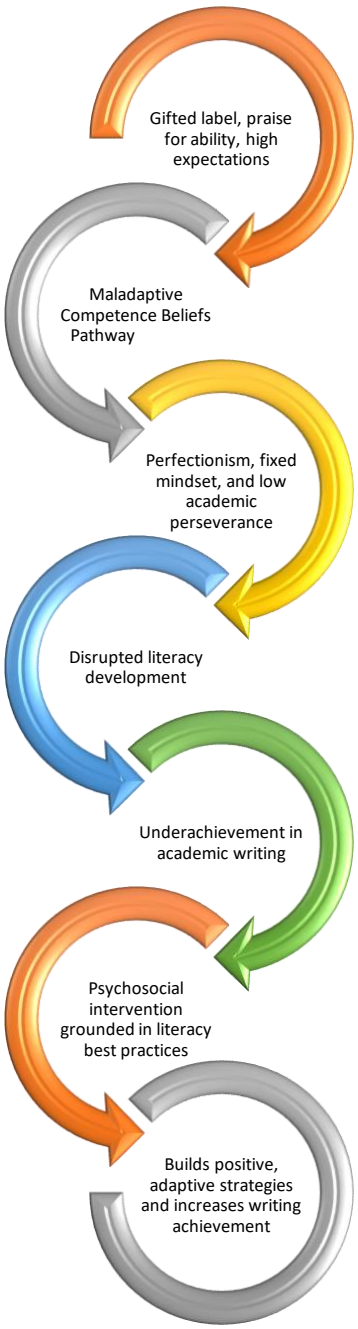

Figure 1. Conceptual framework. I created this figure to depict the chain of related events that can lead to underachievement and the study's proposed approach to intervene effectively.

CHAPTER III

SOLUTION AND METHOD

Proposed Solution

In order to explore relationships between mindsets, academic growth, and academic achievement within the gifted population, I implemented a quasi-experimental, quantitative study to examine the impact an embedded psychosocial approach to academic writing had on gifted elementary students' academic growth in language arts and beliefs about intelligence and domain-specific abilities. I conducted a quasi-experimental research design by analyzing English language arts pretests and posttests from a control and treatment group of fourth-grade students attending a magnet school for highly gifted students. Additionally, I assessed the treatment group's self-reported mindset regarding intelligence and writing ability both before and after the treatment. Analysis of these assessments was conducted in order to shed light on the impact of a growth-mindset intervention on academic growth in writing, the impact of a growth-mindset intervention on students' self-reported mindsets, and the relationship between academic growth in writing and espousing a growth mindset.

Context and Participants

Study Context

The school in which the study was conducted serves a unique population of highly gifted students identified through a series of cognitive, intelligence, and achievement tests. As a result of the school's narrow inclusion criteria, the school's total student population is around 150 students. The first through eighth grade publicly funded school operates within a larger urban/suburban district under the direction of its school board, superintendent, and leadership

structure. Families apply to attend the school of choice as they recognize the needs of their unique learner may be best met in a specialized program that is smaller and more suited to individualize learning paths for each student. As a result of the school's unique context, the work at this school may not be representative of all gifted populations in other settings.

Study Participants

For this study, pretest scores and posttest scores were compared from two groups of fourth-grade students attending a magnet school for gifted students. As such, the process for selection may be described as nonrandom or convenience-selected (Creswell, 2014). The control group of students attended fourth grade in the 2017–2018 school year and significant amounts of growth-mindset related curriculum were not embedded into academic writing lessons. The treatment group attended the fourth grade in the 2018–2019 school year and received writing instruction with embedded growth-mindset lessons and approaches. The number of participants in the study numbered 26 in the control group and 24 in the treatment group. In the control group, 35% were ethnically identified as White, 27% as Hispanic, 19% as Asian, and 19% as Black. In the treatment group, 33% were ethnically identified as White, 29% as Black, 25% as Hispanic, and 13% as Asian. The racial-ethnic groups represented in the sample are illustrated in Figure 2.

Additionally, the treatment group consisted of 19% female students and 81% male students; the control group consisted of 25% female students and 75% male students. Of the participants, 31% of the students in the control group and 21% of the treatment group were identified as economically disadvantaged.

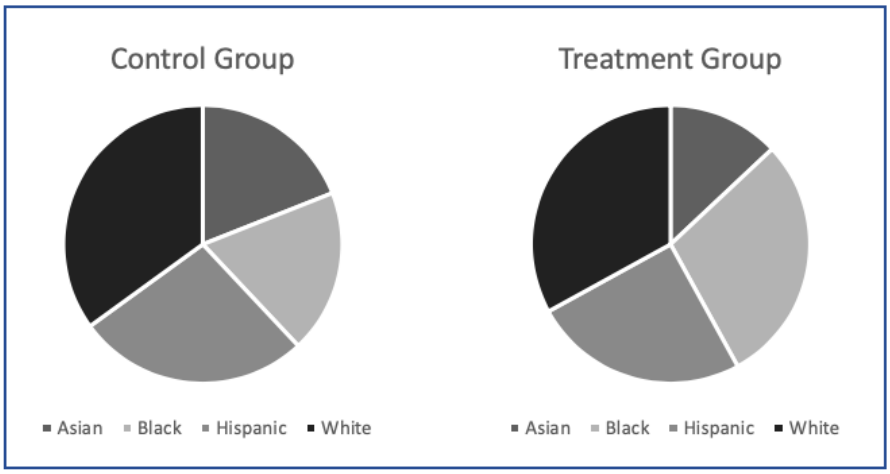

Figure 2. Demographics. This figure shows a side-by-side comparison of the demographic breakdown for the two groups.

In order to be eligible to receive gifted services through the magnet school, students met criteria for cognition and achievement. As such, the students were similar in terms of cognitive abilities as all students attending the school were tested across three different measures and met the same criteria to be labeled highly gifted—two sub-scores of 130 or above on a group-administered cognitive test, two sub-scores of 135 or above on a diagnostician-administered test of intelligence, and both reading and math achievement in the 80th percentile or above. For initial screening, students took the Cognitive Abilities Test and had two sub-scores of 130 or above from the three scores the test generates. For the second round of testing, students were administered the Wechsler Intelligence Scale for Children and had two or more sub-scores of 135 out of the five generated scores. The sub-scores were generated with a 90% confidence interval. For achievement, the students were administered Northwest Evaluation Association's (NWEA's) Measures of Academic Progress (MAP) Growth in reading and math. Students scored at an 80th percentile or above in both subject areas when compared to their same-aged

peers. As an achievement test, MAP Growth was particularly suited to the gifted student population due to being computerized and adaptively branched. The system began by administering questions at the average level and increased and decreased in difficulty until the student answered approximately 50% of the questions correctly. This ensured that the resulting scaled score mapped to content in the zone of proximal development for the student. Additionally, the test bank branches all the way into high school-level content and ensured that, for elementary-aged children, it is unlikely that the student faced the ceiling effect and ran out of testing items above the student's level of mastery.

Research Paradigm, Data Collection, and Analysis

It is rare in gifted education research for experimental groups to be able to control for intelligence as definitions, criteria, and inclusion in gifted programs can vary widely and this discrepancy is often cited as a weakness in many studies. A study within this school's context and population provided an opportunity to control for variables that are typically difficult to control, as well as pulling together a population of students who are identified as highly-gifted from several surrounding communities which is by definition extremely small as it is the top 1–2% of the gifted population. As such, this groups' resulting homogeneity in terms of identification and group size of approximately 25 students cannot be readily found in the literature.

For the first research question, I employed a quasi-experimental design, specifically a nonequivalent (pretest and posttest) control group design (Creswell, 2014). The mindset curriculum embedded into the treatment groups' language arts curriculum served as the independent variable in the study while the growth in achievement on a standardized

achievement test was the dependent variable in the study. A common problem in gifted education is that many achievement tests fail to adequately measure a gifted students' abilities due to the ceiling effect, when a test does not include enough complex questions to measure the extent of students' mastery of the content and where that mastery breaks down. Similarly to the admissions criteria, the NWEA MAP Growth in Language Arts was used in this study as it is both computerized and adaptively branched, which ensured that the test will automatically adapt to the students' responses to avoid the ceiling effect, and assessed learning beyond grade-level skill mastery through the generated scale score. For the purposes of this study, growth was measured as the difference in scaled scores between the fall and winter administrations of the test. For the analyses, an independent samples *t*-test was conducted using both groups' language arts growth scores between fall and winter testing windows.

For the second and third research questions, survey data from the treatment group were collected and analyzed using a single-group, interrupted time-series design (Creswell, 2014). Students completed a Likert-style survey before and after the treatment to measure any changes in espoused mindset for both general intelligence and the domain-specific area of academic writing. The scale used in the study, the Revised Implicit Theories of Intelligence (Self-Theory) Scale, is used to measure beliefs about a students' ability or inability to change his or her own intelligence through eight survey items. Castella and Byrne (2015) revised Dweck's original growth mindset survey through the addition of first-person items rather than third-person in order to measure beliefs about the nature of respondents' own intelligence rather than just intelligence in general. The survey showed strong internal consistency with a Cronbach's alpha of .90, which is similar to Dweck's original survey with a Cronbach's alpha of .84. Additionally, the authors

found that the revised variation of the study produced a correlation with motivation, engagement, and performance in school (Castella & Byrne, 2015). The survey included four statements associated with a fixed or entity mindset and four statements associated with a growth or incremental mindset. Students responded on a 6-point scale (1 = *strongly disagree*, 2 = *disagree*, 3 = *mostly disagree*, 4 = *mostly agree*, 5 = *agree*, and 6 = *strongly agree*). The survey includes entity response items such as "I don't think I personally can do much to increase my intelligence" and incremental items such as "I believe have the ability to change my basic intelligence level considerably over time."

Following the same revision format as Castella and Byrne (2015), and in order to measure any differences between a students' entity beliefs when related specifically to the academic domain of writing, an additional eight survey questions were created for this study. Original scale items were carefully modified to include the term "ability to write" in place of the term "intelligence" with no other modifications to the survey items made. The resulting survey (see Appendix A) consisted of a total of 16 items and was orally administered to the treatment group in both the fall and the winter.

The data collected on the survey tool were analyzed using paired samples *t*-tests to explore the potential impact of a short-term, growth mindset intervention on students' beliefs about general intelligence and beliefs about the ability to grow their competency in academic writing tasks. Additionally, growth in students' achievement data in language arts was analyzed through correlation procedures in order to explore connections between growth in surveys measuring mindset and growth in language arts scores between the two testing windows. In totality, a summary of these findings was created to piece together an overall picture of how the

growth-mindset intervention impacted the highly gifted learners in the treatment group in terms of both academic growth and espoused mindset.

Timeline

A timeline for the quantitative study is detailed in Figure 3. The study consisted of three primary phases throughout a two-year period.

Description of Intervention

The control group in the study participated in writing instruction and followed best practices in literacy along with the district's scope and sequence. Instruction included writer's workshop time consisting of short lessons delivered by the teacher to the students after which the students drafted their own material, revised and edited with peers and their teacher, and shared final products. The students moved independently through the phases of the writing process, roughly at their own pace, with teacher guidance and feedback. The students practiced the art of revising their work and editing for errors in grammar and spelling. Time in class was included for both traditional standardized testing formats (where students identify mistakes or identify corrections that will improve the writing) as well as embedded practice in personal and peers' drafted text (where students would read through samples of their writing and the writing of their peers and look for opportunities to improve either the craft or the mechanics of the writing). The district's scope and sequence for the pace and depth of content presented to students was followed and was inclusive of all of the state's required standards in language arts. The students participated in a designated block for writing instruction daily for 50 minutes. The writing block on Friday included an extra 10 minutes and included an emphasis on the revising and editing process as well.

<table>
<tr><td colspan="2">Phase One- Fall of the School Year- Pretest Data Collection</td></tr>
<tr><td>Control Group- Fall of 2017
Students will take their beginning-of-year Measures of Academic Progress (MAP) testing in Language Arts.</td><td>Treatment Group- Fall of 2018
Students will take their beginning-of-year Measures of Academic Progress (MAP) testing in Language Arts.
Students will take their initial Growth Mindset Survey.
Students' language arts lessons will include embedded growth-mindset components throughout the Fall semester.</td></tr>
<tr><td colspan="2">Phase Two- Winter of the School Year- Posttest Data Collection</td></tr>
<tr><td>Control Group- Winter 2017
Students will take their middle-of-year Measures of Academic Progress (MAP) testing in Language Arts.</td><td>Treatment Group- Winter 2018
Students will take their middle-of-year Measures of Academic Progress (MAP) testing in Language Arts.
Students will take a second Growth Mindset Survey.</td></tr>
<tr><td colspan="2">Phase Three- Spring of 2019- Data Analysis</td></tr>
<tr><td>Control Group
Relationship between academic growth between treatment groups</td><td>Treatment Group
Relationship between academic growth between treatment groups
Change toward growth mindset at the conclusion of the intervention
Relationship between academic growth and growth in mindset</td></tr>
</table>

Figure 3. Timeline for research: Impact of embedded growth-mindset intervention.

The period of time between the fall and winter testing period consisted of 15 weeks of instruction. Students in the control group were actively engaged in the writers' workshop process and instructional lessons. However, the students did struggle to fully invest time and energy into the revising and editing process. Students had a tendency to accept writing from the

very first draft and viewed rewrites as a sign of failure. They sought to create perfect drafts from the beginning and resisted constructive feedback from others. Students were able to identify areas for improvement in others' work with limited success but did not pay attention to those areas needing improvement in their own work. As a result, the teacher modified the curriculum the following school year to address the students' fixed mindset and perfectionism, particularly in the writing discipline.

The following school year, the treatment group participated in the same style of writing instruction with the same schedule and taught by the same teacher. However, changes to the curriculum were made in order to positively impact students' outlook toward revising, editing, and growth in writing ability. The modifications to the curriculum fell into three categories: embedding growth mindset minilessons into Friday lessons, modifying teacher-to-student feedback to include growth language, and explicitly referencing growth-mindset skills and ideas when students struggled in order to help the student reframe.

A total of 15 short lessons were taught to the 2018–2019 cohort of students focusing on growth mindset ideas and practices. The lessons typically began with a whole group presentation through a digital format while students reflected and worked with a companion note-taking tool. Students would complete self-analysis questions related to their own personal context before using the tool in a writing context. The growth-mindset lessons (see Appendix B) typically lasted 25 minutes of the hour-long writing period students attended each Friday and prefaced the writers' workshop time in the classroom. The topics covered the general philosophies and research surrounding the concept of growth and fixed mindsets, strategies students could use to foster a growth mindset, and lessons of role models who embodied growth

mindsets at one or more pivotal moments in their lives. These lessons were independent of the academic content for writing instruction, but the connection between the day's lesson and the following writing period was made explicit to the students. The teacher ensured that the students bridged the mindset lesson to the writer's workshop time by closing each lesson with a time of reflection where students shared how the lesson impacted their lives and one of those impacts was required to be connected to the academic discipline of writing.

However, the intervention went further than simply teaching the lessons within the writing period and having students verbalize the connections. The second prong of the intervention included revising the types of feedback given teacher-to-student and peer-to-peer during the editing and revising portion of the writer's workshop. These conversations were ongoing throughout the 15-week intervention period and not restricted to the Friday lessons. The teacher modeled growth mindset language when giving feedback and students practiced giving that feedback to others and themselves. Students looked for growth feedback specifically and were rewarded when identifying it or giving it to others. The difference in feedback between the control and treatment group (see Appendix C) intentionally created a classroom culture where mistakes were not feared or hidden but celebrated as a first step on the journey to improvement.

The third prong of the curriculum intervention involved an ongoing reference to the Friday growth-mindset lessons throughout the instructional periods during the 15-week intervention period. Similar to the methodology employed during the minilesson, the teacher and students made it a game to identify connections (see Appendix D) to the mindset lessons in the writer's workshop lessons on author's craft, grammar, and revision strategies. The constant reminders and references were intended to keep the frame of having a growth-mindset fresh in

students' minds as they studied in class in an effort to both cultivate more growth-oriented strategies and also to associate growth-oriented thinking specifically in the domain of academic writing.

Reliability and Validity

History

History can be a threat to internal validity as through the passage of time, one group of participants may experience outside events that influence the study beyond the targeted experimental treatment (Creswell, 2014). For this study, history played a role as the control group and treatment group are from two different school years. However, external events for the 2017–2018 and the 2018–2019 school years were very similar in nature. Students were in the same school, placed in similarly sized classes, taught by the same teacher using similar lesson plans (with the exception of the embedded intervention for the treatment group), and school event calendars and instructional practices were consistent between the two years. Additionally, teacher expertise and experience are consistent as the teacher for the two groups is in the last three years of a long career and is not at a period of rapid growth and improvement in teaching methodology and expertise as one might find in a teacher just beginning his or her career in education.

Maturation

Maturation as a threat to internal validity occurs when participants mature through the passage of time in a study and may account for the variability between groups (Creswell, 2014). Maturation was handled in this study by using participants in the same grade level and age range and testing was conducted at similar points in the school year.

Selection

Another threat to internal validity, selection, takes place when participants in one group have subject-related characteristics that may predispose them to favor a certain outcome, such as a self-selected experimental group (Creswell, 2014). In order to address selection validity, this study used students from two separate years. As a population of highly gifted students is inherently small, due to the nature of their identification and the unique context of a magnet school for such students with a very specific methodology and curriculum, finding a concurrent group of similarly selected students would have proved difficult. Comparing students from a different cohort ensured that the group was similar in overall IQ, gender, age, and school setting. Both sets of students were taught by the same teacher, which helped control for teacher effectiveness and other strategies employed. Both sets of students also took the pretest and posttest during similar times in the school year to account for time. This ensured that improvement in academic writing could be logically connected to the pedagogical shift by the teacher to include more growth mindset material in her lessons rather than the time that had passed between the two surveys.

Testing and Instrumentation

Taking into consideration the impact of the testing and instrumentation used with participants in a study is yet another threat to internal validity considered for this study. In order to ensure that students were not familiar with tested items used for measuring academic growth and that the testing tool does not change, the students' standardized test scores in language arts from the beginning of the year and the middle of the year were analyzed for growth. The items on the test were different, which ensured that students were not overly familiar and were also

four months apart in time span. For the survey, the students were asked the same questions using the same tool but with a four-month time span between the data collection periods.

Conclusions for Chapter III

I found that the two quantitative quasi-experimental designs proposed for my record of study to be both appropriate for my research questions as well as a unique opportunity for quantitative research in the field of gifted education. By employing two different designs, I tailored the design to best answer each question. The resulting summary of data provided a more holistic picture regarding the impact of growth-mindset interventions and the impact of mindsets on academic growth and achievement.

CHAPTER IV

ANALYSIS AND RESULTS/FINDINGS

Introduction to the Analysis

In order to investigate the impact a growth mindset curriculum intervention may have in the language arts classroom, the following questions were posed and analysis procedures used. The first question involved exploring if there would be a significant difference in the mean academic growth in language arts between the cohort that received the intervention and the previous year cohort that did not receive the intervention. The data were collected before and after the implementation of the growth mindset curriculum intervention using a quasi-experimental research design. A nonequivalent (pretest and posttest) control group design was used to answer the following research question: Will a group of gifted, fourth-grade students exposed to a growth mindset intervention in language arts class show significantly more growth in language arts, as measured by an achievement test, than the control group that did not receive mindset lessons?

The second question was two-pronged and involved analyses to detect any significant differences in students' mindset (both for general intelligence and writing ability) after having been exposed to the growth mindset intervention. This portion of the study also used a single-group, interrupted time-series design and used the data from both fall and winter survey deployment as reference points to answer the following question: Is there a significant difference in students' mindset (for intelligence and writing ability) after having been exposed to a growth mindset intervention in the language arts classroom?

The third question for the research study was also two-pronged and related to students' mindsets regarding generalized intelligence and students' mindsets regarding writing ability. For both prongs, the same analysis was conducted to discover if there was a relationship between growth on the corresponding mindset survey and growth on the language arts achievement test. Two different surveys were used—one to measure students' mindset regarding generalized intelligence and the other to measure students' mindset regarding writing ability. The same language arts achievement testing was used for both analyses. Changes to mindsets and growth in achievement was found by comparing fall and winter data points for both the surveys and the achievement testing. For this portion of the study, a single-group, interrupted time-series design was employed (Creswell, 2014) in order to answer the following question: Is there a relationship between students' movement on a mindset survey (both for intelligence and writing ability) and students' growth in language arts achievement?

Question One

With the first research question, I sought to discover if there would be a significant difference in the positive growth in academic writing achievement between a group of gifted fourth-graders exposed to an embedded growth mindset intervention and a group that did not experience academic writing lessons with embedded growth mindset components. The 2018–2019 cohort of students that received the growth mindset lessons embedded into their language arts curriculum ($N = 24$) was associated with growth in language arts achievement ($M = 5.13$, $SD = 4.893$). Comparatively, the 2017–2018 cohort of students who did not receive the curricular intervention ($N = 26$) was associated with a numerically smaller amount of language arts achievement growth ($M = 3.31$, $SD = 5.312$). However, in order to test the hypothesis that

students receiving a growth-mindset curriculum embedded into a specific academic discipline would have statistically greater amounts of growth in that discipline, an independent samples *t*-test was performed. Additionally, the assumption of homogeneity of variances was tested and satisfied via Levene's *F* test for equality of variances and indicated that the assumption of equal variance can be assumed, $p = .890$. The *t*-test for independent samples revealed that there is not a statistically significant difference in language arts achievement between the 2018–2019 cohort that received the embedded mindset lessons and the 2017–2018 cohort that did not receive the lessons, $t(48) = -1.255$, $p = .216$.

Question Two

To answer the second research question, I explored the possibility that a student's mindset regarding intelligence or writing ability would significantly change after exposure to the growth mindset curriculum. In order to test this question, paired-sample *t*-tests for both the intelligence and academic writing survey were conducted.

In order to explore how mindset lessons embedded into language arts lessons would impact a students' mindset about general intelligence, a paired-sample *t*-test was performed. Students mindset survey results in the fall ($M = 4.23$, $SD = 0.96$) and survey results in the winter ($M = 4.93$, $SD = 1.23$) were compared and are numerically higher. Additionally, the null hypothesis of equal mindset towards general intelligence both before and after the mindset treatment was rejected, $t(23) = -3.549$, $p = .001$. Thus, the post-intervention mean was statistically significantly higher than the pre-intervention mean on the growth mindset survey regarding intelligence. Furthermore, Cohen's *d* was estimated at .632, which is considered to be between a medium and large effect size.

Similarly, a paired-sample *t*-test test was conducted with students' survey results regarding their mindset towards their writing ability. Students' mindset toward writing ability in the fall (M = 4.65, SD = 1.13) and survey results in the winter (M = 4.83, SD = 1.20) showed a numerically higher difference. However, the null hypothesis of equal mindset towards writing ability both before and after the mindset treatment could not be rejected, $t(23) = -1.052$, $p = .152$. As such, the difference in means between the fall and winter surveys regarding mindsets towards writing ability did not reach the level of statistical significance and could have occurred by chance alone.

Question Three

Finally, for the third research question I was concerned primarily with the students' evolving mindsets about intelligence or writing ability and if those shifts had any impact on a student's academic growth in language arts. This was explored by comparing the difference in students' score on the Likert survey with the achievement growth shown between the fall and winter testing of language arts.

Correlation procedures were used to analyze data regarding the association between the amount of growth shown between the pretest and the posttest in language arts and the difference in students' score on the mindset survey regarding intelligence. The Pearson product moment correlation coefficient and R_2 were used as indicators of the covariation of these two variables. Data were collected from the 2018–2019 cohort of fourth-grade students using a Likert survey and an achievement test in the fall and the winter. The mean difference in scaled scores was 5.13 (SD = 4.893), while the mean difference in scores on the survey regarding mindsets towards intelligence was 0.698 (SD = 0.963). A Pearson's *r* data analysis revealed a weak negative

correlation, r = -.138. Students who showed positive growth in the Language Arts Reading: Informational Text (RIT) assessment experienced slightly less change towards growth along the continuum in the survey regarding their beliefs about intelligence. Additionally, the correlation procedure showed that the students' growth in Language Arts assessment scores was not a significant predictor of growth on the mindset survey regarding beliefs about intelligence [F (1, 22) = 0.428, p = .260]. The R^2 of 0.019 indicated that, of the total variability that existed in students' RIT score growth in Language Arts assessment, only 1.9% of the percent of variance in students' RIT scores could be explained by the shift in scores on the mindset survey regarding the students' beliefs about intelligence.

Similarly to the analysis of survey data regarding intelligence and growth in RIT scores in Language Arts, correlation procedures were also used to analyze data regarding the association between the amount of growth shown between the pretest and the posttest in language arts and the difference in students' score on the mindset survey regarding their writing ability. The Pearson product moment correlation coefficient and R^2 were used as indicators of the covariation of these two variables. Data were collected from the 2018–2019 cohort of fourth-grade students using a Likert survey and an achievement test in the Fall and the Winter. The mean difference in RIT scores was 5.13 (SD = 4.893), while the mean difference in scores on the survey regarding mindsets towards intelligence was .182 (SD = .849). The Pearson correlation coefficient did not reach levels of statistical significance [r(.054) = .066, p = .400], indicating that although the linear association was positive, the variance could not be explained by the students' movement on the growth mindset survey regarding intelligence. The R^2 of 0.003 indicated that, of the total variability that existed in students' RIT score growth in Language

Arts, less than 1% of the percent of variance in students' RIT scores could be explained by the shift in scores on the mindset survey regarding the students' beliefs about their writing ability.

Summary of Results

In summary, this chapter contains the results of the analyses conducted with students' survey and achievement data in language arts both before and after a growth-mindset intervention was embedded into a semester of language-arts instruction. While each question showed some numerically higher growth, only one difference in means before and after treatment showed a statistically significantly higher difference. Results indicated that there was not a significant difference in language arts achievement between the fall and winter language arts testing when comparing a cohort that received the intervention with a cohort that did not receive the intervention. Additionally, a statistically significant relationship was not found when comparing students' growth on the mindset survey and students' growth in language arts achievement in the fall and winter testing windows. Lastly, when comparing students' mindsets as measured by survey results in the fall and winter testing windows, a statistically significant positive movement towards espousing a growth mindset towards general intelligence was found. However, the same movement could not be found on the survey designed to measure positive movement towards a growth mindset regarding students' beliefs about their writing ability. Discussion regarding the possible implications of these findings can be found in the following chapter.

CHAPTER V

CONCLUSIONS

Summary of Findings from Chapter IV

The purpose of this quantitative study was to explore the potential impact of embedding a growth-mindset intervention into a group of highly gifted, fourth-grade students' language arts lessons for a semester. With the intervention, I aimed to increase students' willingness to approach the writing task from a growth-oriented perspective ultimately to impact their ability to grow in their language arts skills as reflected in their achievement scores. In this chapter, I summarize the findings of the study, discuss the results in relation to the research, explore personal lessons learned from the study, outline implications for practice, and suggest recommendations for future practice or research.

With the study, I aimed to answer the following research questions:

(1) Is there a difference in the amount of growth in academic writing achievement between a group of gifted, fourth-grade students exposed to an embedded growth mindset intervention and a group that did not experience academic writing lessons with embedded growth mindset components?

(2a) Is there a significant difference between a students' mindset regarding their ability to change their general intelligence before and after a growth-mindset curricular intervention?

(2b) Is there a significant difference between students' mindset regarding their ability to change their writing ability before and after a growth-mindset curricular intervention?

(3a) Is there a correlation between movement on a growth mindset survey about general intelligence and growth in academic writing achievement for gifted fourth graders?

(3b) Is there a correlation between movement on a growth mindset survey about writing ability and growth in academic writing achievement for gifted fourth graders?

Within the context of the school in the study, gifted fourth-grade students were struggling to perform in language arts and/or writing tasks even with high verbal abilities, strong reading

comprehension, and expansive vocabularies. Since research in gifted education indicates that some underachievement may be impacted by psychosocial factors not solely attributable to gaps in content knowledge and skills, an embedded growth-mindset intervention was created for the students. The intervention aimed to merge effective psychosocial interventions with best practices in literacy instruction with the intention that the students would build more positive adaptive strategies such as developing a growth mindset and academic grit, which would, in turn, result in growth in gifted students' writing achievement.

A quasi-experimental research design, specifically a nonequivalent (pretest and posttest) control group design, was employed to test the first research question. Students in the 2017–2018 cohort were used as a control group, and students in the 2018–2019 cohort received the intervention treatment. Data collected from each group for the comparison were from the fall and winter administrations of the NWEA MAP test for language arts. The second and third research questions were answered through a single-group, interrupted time-series design with the 2018–2019 cohort only. Data collected and analyzed for these two questions were drawn from fall and winter achievement scores in language arts as well as survey data regarding students' mindsets towards both generalized intelligence and writing ability.

The resulting analyses from each of these questions included numerically higher results, but most failed to meet the bar of statistical significance at the alpha level ($p > .05$). As a result, the null hypothesis could not be rejected, and no statistical difference was found. Students did not have a significant measurable increase in language arts achievement and growth when compared to the to the control group. Additionally, there was no significant relationship between students' average growth on the mindset survey regarding intelligence or writing ability and

corresponding average growth in language arts achievement. Finally, there was not a significant measurable change in survey results regarding students' ability to improve their own writing ability.

Notably, however, when analyzing results for Question 2a, which involved looking at the difference between students' mindset towards generalized intelligence before and after the treatment, a significant, positive change was indicated. For this question, the null hypothesis was rejected, and the increase in the mean between the fall and winter surveys was found to be statistically significant and likely not a result of chance. Students did show significant, measurable, positive changes after the intervention period in espousing a growth mindset regarding their ability to impact their own general intelligence through hard-work, grit, and determination.

Discussion of Results in Relation to the Review of the Literature

Policy recommendations for improving educational outcomes for students increasingly suggest the use of psychosocial interventions targeting mindsets as a leverage point for school improvement (Rattan et al., 2015). The call to action includes suggestions to "integrate validated academic mindset programs and practices into existing school programming" (p. 723). Additionally, Blaas (2014) points out that "while research indicates a strong correlation between social-emotional wellbeing and school outcomes...there is also a need to analyse existing social-emotional programs to determine whether there is an improvement in educational outcomes when social-emotional wellbeing is improved" (p. 251). The questions asked in this study were chosen in order to study an academically-integrated mindset intervention explore impacts on both mindset and to discover any improvement in related educational outcomes. The findings in

this study align to current literature in that the students' responded quite favorably to the psychosocial intervention itself in regard to generalized intelligence. However, impact to related academic outcomes were much less promising and did not completely align with previous studies that found that mindset interventions were related to gains in GPA, increased enjoyment in school, and even reversal of recently developed underachievement trends (Spitzer and Aronson, 2015).

However, much of the research regarding the impact of growth mindset interventions were conducted with generalized populations and the students in this study may have competing belief systems that account for some of the difference found in the impact of a growth mindset on their specific academic outcomes. The pathway to underachievement incorporated into the conceptual model for this study holds that gifted students' identity beliefs about intelligence play a central role in their risk avoidance and underachievement (Snyder & Linnenbrink-Garcia, 2013). However, the authors also warn that single-variable interventions may not suffice for the improvement of underachievement as the students may internalize a "cluster of beliefs" and may require a multi-faceted approached that attacks several pieces of the pathway simultaneously (p.224). It is reasonable to suggest that in an attempt to isolate variables for clear analysis, the intervention may have been so targeted as to not have a measurable impact on the underachievement pathway as measured by academic growth and achievement in language arts scores.

What remains unclear is if psychosocial coaching such as the type elite athletes encounter in order to have positive mindsets towards growth, setbacks, feedback and critique cycles can be used to increase achievement in students whose gifts lie in academic contexts (Subotnik et al.,

2011). The positive research in this area tends to be in discussions of talent development in domain-specific areas. This study was domain-specific but in an area of relative weakness rather than strength for many of the participants. Psychosocial skills and mindsets may need to be taught in talent-development activities in more positive contexts for students to be able to "acquire, practice, and hone key psychosocial skills such as emotional regulation, openness to feedback and critique, or a growth mindset" (Olszewski-Kubilius et al., 2017, p. 65). In summary, while this study aligns with research that mindset interventions are ultimately impactful, a lack of clear related student outcomes points towards a need for underachievement in gifted students to be addressed at simultaneous, multiple levels for maximum effectiveness.

Discussion of Personal Lessons Learned

The results of this study served as a reminder that practitioners can often choose a school improvement initiative one or more steps removed from the problem to be solved. In the case of this study, I studied an intervention crafted to improve a students' growth mindset so that academic achievement in language arts would increase. The intervention proved to be quite successful in its primary aim to change students' mindset regarding general intelligence, but the results of the study did not support the idea that the intervention increased student achievement. I have witnessed this phenomenon at the level of the state, district, and classroom. While some of the results of this study were promising, it serves as a reminder that more time defining the problem and developing a more thorough and nuanced understanding of all of the driving factors behind the problem of practice could lead to more significant results.

Additionally, the research involved in the designing of this study taught me much about the difficulty behind research-based interventions when targeting a specific and narrow

population such as gifted learners. The diversity in measures used to identify students as gifted, the conflicting views and definitions of giftedness, the rarity in the population leading to predictably smaller sample sizes, ceiling effects on assessment tools, and the lack of peers in normed groups all lead to many gaps and questions in the literature when considering gifted education. While I addressed some of these concerns in my study, such as homogenous identification of students and achievement testing without a ceiling effect, my sample size was still relatively small, and sampling size could have played a role in the results found through the study. As I result, I have learned the importance of specialized schools such as the one in the study's context to provide an appropriate setting for researchers to further knowledge in the area of gifted education. This study also increased my desire to work within professional organizations such as the Texas Association for the Gifted and Talented and to collaborate with other similarly constructed campuses to widen my pool of resources and knowledge of effective instructional practices for gifted students.

Implications for Practice

Although the data in this study did not fully support the idea that using a growth-mindset intervention within a specific domain such as writing would increase academic growth in that subject area, the practice could still be modified and used to collect additional data for effectiveness. The results of this study do indicate that the growth-mindset curriculum positively impacted the students' belief system regarding general intelligence with students more likely to espouse a growth mindset and developing more firmly an incremental view of intelligence. Similar results regarding domain-specific abilities may very well have been possible with a more targeted intervention approach within the specific domain of writing.

Additionally, results also indicate that the practice was having a positive impact on students' beliefs towards intelligence, but that any subsequent, related positive correlations with academic growth may require a longer span of time to show significant results. While research and the study's results point to some short-term gains, it remains to be seen if these gains lead to more long-term impacts reflected in secondary measures such as discipline-specific achievement data.

Recommendations

Further analysis and learning regarding the interplay between psychosocial interventions and academic growth and success, particularly within the gifted population, remains an area in need of attention. While it remains clear that psychosocial interventions can impact students in a measurable way, more work is needed in understanding which interventions are the most effective and how those positive changes are reflected in a more academic measure. My recommendations for further research include additional studies to address the following: improvements in student sampling, modifying instrumentation and types of data, incorporating additional study designs, and adjusting the intervention itself.

Sampling within such a small population remains a daunting task but increasing efforts in this area could yield clearer results for researchers and practitioners alike. I recommend exploring different ways to increase sample size without sacrificing homogeneity. This could be achieved by widening the scope of the study to include multiple grade levels of students within a certain band, such as third through fifth grade or middle school students. Alternatively, future research efforts could include schools with similar demographics across the state. While there are not many schools that focus on highly gifted student populations, there are enough to

potentially widen the pool of students and the contexts of the school would remain somewhat similar in nature.

Additionally, extending the methods of data collection and types of instrumentation used may also yield promising results. For the purposes of this study, language arts achievement and growth were measured with a standardized achievement test. However, incorporating analysis of writing samples may have yielded evidence of academic growth that scaled scores on an achievement test did not reveal. The survey used to measure beliefs about students' academic writing ability was created by modifying an existing survey measuring fixed or growth mindsets regarding general intelligence. The resulting survey, while internally consistent, may have narrowed the scope of the survey to such a degree that movement on the scale would be too hard to detect. While domain-specific mindsets are an area of needed focus, it may need to be broader; for example, researchers could use as a survey meant to measure students' beliefs about their ability to improve their creativity. This could be appropriate for study as the act of writing is an act of creativity, but the use of broader, less defined, and expansive language would be more analogous to the thinking regarding general intelligence as its measured on the original survey.

Another angle to explore would be the use of alternative methods and research design in the future to add to the results of this study. A mixed methods research design that includes qualitative elements such as coding teachers' conversations with students to include themes within the feedback sessions and tracking any increases in growth-oriented language used by students could add valuable insight to the quantitative data sources. Finally, incorporating a

longitudinal study with an extended period of intervention and analyzing trends in growth and achievement over several years of data may also yield interesting results.

Additional topics in need of closer examination include the study of other academic disciplines or considering students' academic growth and achievement across all disciplines in aggregate rather than focusing on one specific discipline. While the literature calls for more research into domain-specific studies, the results of the study could show that the intervention needs to be more specifically crafted to the content into which it is embedded. Finally, exploring other programmed interventions intended to impact students' mindset and achievement would be an area worthy of additional attention. With the recent increased attention on social-emotional learning for students, the need for more studies to validate the impact of packaged programs will remain imperative for practitioners to choose wisely among the many options provided.

Conclusions for Chapter V

Academic achievement, academic growth, and social-emotional development will continue to be critical components of the educational system and the three will remain intertwined in complex ways. The results of this study show that an academic intervention and social-emotional intervention can be combined and embedded with some significant results. However, how these interventions may impact students over longer time spans and how these interventions may impact secondary measures targeting academic growth and achievement remains to be explored, particularly when looking at domain- and discipline-specific areas. More research and development into multi-pronged approaches that take the whole child into consideration is needed to deepen understanding of how to prevent or reverse underachievement in all student groups, including gifted learners.

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APPENDIX A

THEORIES OF INTELLIGENCE (SELF-THEORY) SCALE AND DOMAIN-SPECIFIC BELIEFS

The following questions are exploring students' beliefs about their personal ability to change their intelligence level and their ability to write. There are no right or wrong answers. We are just interested in your views. Using the scale below, please indicate the extent to which you agree or disagree with the following statements.						
	Strongly disagree	Disagree	Mostly disagree	Mostly agree	Agree	Strongly agree
1. I don't think I personally can do much to increase my intelligence.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
2. I can learn new things, but I don't have the ability to change my basic intelligence.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
3. My intelligence is something about me that I personally can't change very much.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
4. To be honest, I don't think I can really change how intelligent I am.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
5. With enough time and effort I think I could significantly improve my intelligence level.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
6. I believe I can always substantially improve on my intelligence.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
7. Regardless of my current intelligence level, I think I have the capacity to change it quite a bit.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
8. I believe I have the ability to change my basic intelligence level considerably over time.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
9. I don't think I personally can do much to increase my ability to write.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
10. I can learn new things, but I don't have the ability to change my basic ability to write.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
11. My ability to write is something about me that I personally can't change very much.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6

The following questions are exploring students' beliefs about their personal ability to change their intelligence level and their ability to write. There are no right or wrong answers. We are just interested in your views. Using the scale below, please indicate the extent to which you agree or disagree with the following statements.						
	Strongly disagree	Disagree	Mostly disagree	Mostly agree	Agree	Strongly agree
12. To be honest, I don't think I can really change my ability to write.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
13. With enough time and effort I think I could significantly improve my ability to write.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
14. I believe I can always substantially improve on my ability to write.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
15. Regardless of my current ability to write, I think I have the capacity to change it quite a bit.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6
16. I believe I have the ability to change my basic ability to write considerably over time.	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6

APPENDIX B

GROWTH MINDSET LESSON SUMMARY

Lesson 1: Learning about how the brain develops and grows

Lesson 2: Learning about mindsets

Lesson 3: Identifying statements related to fixed and growth mindsets

Lesson 4: Recognizing positive and negative self-talk

Lesson 5: Transforming fixed thoughts to growth thoughts

Lesson 6: Success may not teach you new skills

Lesson 7: Learning from mistakes and failures

Lesson 8: Famous failures

Lesson 9: Persistence and grit

Lesson 10: The cause and effect of quitting

Lesson 11: Feedback versus criticism: How to give and receive it

Lesson 12: Holding others' accountable for negative self-talk

Lesson 13: Understand the power of yet

Lesson 14: Setting growth-mindset goals

Lesson 15: Self-reflection

APPENDIX C

EXAMPLES OF TYPICAL FEEDBACK SESSIONS FOR CONTROL AND TREATMENT GROUP

Sample Feedback: Control Group		*Sample Feedback: Treatment Group*
Teacher*: What did you think of your writing piece?* **Student***: (Shrugs) It's fine I guess.* **Teacher***: What do you think needs to be improved?* **Student***: Nothing really...I like it the way it is.* **Teacher***: I noticed a few things.* **Student***: Ok* **Teacher***: You have a few places where you need to go back to your grammar journal and make corrections. Do you remember when we practiced subject-verb agreement? I noticed several places missing subject-verb agreement. Did you look your paper over before turning it in?*		**Teacher:** *Before we discuss your paper, remember that we aren't trying to be perfect. We just know that finding areas to improve help us grow. I was curious about what parts of your writing shows improvement.* **Student**: *I'm a lot better at capitalization. I paid special attention to my nouns and made sure I only capitalized proper nouns.* **Teacher:** *I noticed that too! I am proud of you for spending the extra time and energy to double-check for that.* **Student**: I wanted to ask you something else though. **Teacher**: Go ahead.

Student*: No. Well I did read it again, but it really looked fine. I didn't see any problems.* **Teacher***: I understand. Go ahead and read your notes about subject-verb agreement then look through your paper one more time. I highlighted the first one for you. We can correct it together. I need you to find the other three on your own though. Bring it back to me to look over once you have corrected them all.*		**Student**: *I never seem to know how to end my papers. Do you have any ideas of what I can try?*

APPENDIX D

EXAMPLES OF CONNECTIONS MADE DURING WRITING WORKSHOP

Example 1: *Students were working to identify examples of abstract language after studying its use in a mentor text. As they moved to the stage of the lesson where they had to incorporate abstraction in published authors' work and various texts, they were frustrated with how difficult examples were to find. Students identified that this was an opportunity to show grit and perseverance and supported each other and gave each other strategies.*

Example 2: *Students were studying how truisms can be a powerful opening to a narrative structure. While they understood how truisms worked and could identify them, it was difficult when it became time to create their own. Students were struggling to come up with truisms that built upon a universal/deeper theme. The teacher was intentional about using language to guide them that would remind them of the growth mindset such as:*

'Let's build upon that.'

'That's a start.'

'It's ok that your first effort isn't quite there. We can build on this. Remember our study on Lincoln? He wasn't even elected to office right away and look what he was able to do accomplish eventually.'

'It's not ready YET. Remember about the power of Yet?'

Example 3: *Students were reminded of how to give feedback versus criticism before they worked on peer review and editing. They made it a game to track on a whiteboard when growth-oriented feedback was given and received appropriately.*

Example 4: *The teacher would begin many lessons with a read-aloud as a mentor text to study authors' craft. In addition to identifying strengths in writing techniques, students began noticing examples of growth mindsets in the characters and scenarios in the books.*